

Climate Change Conspiracy Theories FREE

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Summary

An overwhelming percentage of climate scientists agree that human activity is causing the global climate to change in ways that will have deleterious consequences both for the environment and for humankind. While scientists have alerted both the public and policy makers to the dangers of continuing or increasing the current rate of carbon emission, policy proposals intended to curb carbon emission and thereby mitigate climate change have been resisted by a notable segment of the public. Some of this resistance comes from those not wanting to incur costs or change energy sources (i.e., the carbon-based energy industry). Others oppose policies intended to address climate change for ideological reasons (i.e., they are opposed to the collectivist nature of the solutions usually proposed). But perhaps the most alarming and visible are those who oppose solutions to climate change because they believe, or at least claim to believe, that anthropogenic climate change is not really happening and that climate scientists are lying and their data is fake.

Resistance, in this latter case, sometimes referred to as climate “skepticism” or “denialism,” varies from region to region in strength but worldwide has been a prominent part of a political force strong enough to preclude both domestic and global policy makers from making binding efforts to avert the further effects of anthropogenic climate change. For example, a 2013 poll in the United States showed that almost 40% believed that climate change was a hoax.

Climate skeptics suggest the well-publicized consensus is either manufactured or illusory and that some nefarious force—be it the United Nations, liberals, communists, or authoritarians—want to use climate change as a cover for exerting massive new controls over the populace. This conspiracy-laden rhetoric—if followed to its logical conclusion—expresses a rejection of scientific methods, scientists, and the role that science plays in society.

Skeptic rhetoric, on one hand, may suggest that climate skepticism is psychological and the product of underlying conspiratorial thinking, rather than cognitive and the product of a careful weighing of scientific evidence. On the other hand, it may be that skeptics do not harbor underlying conspiratorial thinking, but rather express their opposition to policy solutions in conspiratorial terms because that is the only available strategy when arguing against an accepted scientific consensus. This tactic of calling into question the integrity of science has been used in other scientific debates (e.g., the link between cigarette smoking and cancer).

Opinion surveys, however, support the view that climate change denialism is driven at least partially by underlying conspiratorial thinking. Belief in climate change conspiracy theories also appears to drive behaviors in ways consistent with the behaviors of people who think in conspiratorial terms: Climate change conspiracy theorists are less likely to participate politically or take actions that could alleviate their carbon footprint. Furthermore, some climate skeptics reject studies showing that their skepticism is partially a product of conspiratorial thinking: They believe such studies are themselves part of the conspiracy.

Keywords: conspiracy theory, climate change, conspiracy thinking, conspiracy ideation, climate denial, partisanship, ideology, climate skeptic, denial, science communication

Subjects: Communication

Over the last one and a half centuries, climate scientists have built an increasingly clear picture of how the Earth's climate is being altered by greenhouse gas (GHG) emissions arising from the burning of fossil fuels (Stocker et al., 2013). Current atmospheric levels of CO₂—the most prevalent and longest-lasting GHG associated with economic activity—are higher than at any time during the past two to three million years (Masson-Delmotte et al., 2013, Figure 5.2), and there is no notable scholarly dissent from the scientific consensus position that global warming is happening, is human caused, and presents a global problem (Anderegg, Prall, Harold, & Schneider, 2010; Cook et al., 2013; Doran & Zimmerman, 2009; Oreskes, 2004; Shwed & Bearman, 2010).

The broad scientific agreement stands in striking contrast to many countries' public discourse in which open skepticism and contrarian voices are prominent (Boykoff & Boykoff, 2004; Painter & Gavin, 2015; Tranter & Booth, 2015). Climate change therefore represents a unique case in that the scientific agreement has solidified, but public opinion at the same time has polarized. It is therefore unsurprising that the skepticism of climate science has attracted considerable scholarly attention.

The voluminous research into opinions toward climate change indicates that people's ideology, that is, their set of deeply held worldviews, is largely responsible for the acceptance or denial of climate science (Dunlap & McCright, 2008; McCright, Dentzman, Charters, & Dietz, 2013; McCright, Dunlap, & Xiao, 2014; Kahan, 2013; Kahan, Bramin, Gastil, Slovic, & Mertz, 2007; Kahan et al., 2012; Kahan, Jenkins-Smith, & Braman, 2011). Of particular note are studies showing that a general propensity to engage in conspiratorial thinking is also associated with opinions toward climate science: that is, individuals with elevated levels of conspiratorial thinking are more likely to deny the existence and severity of anthropogenic climate change (Lewandowsky, Cook, et al., 2015; Lewandowsky, Gignac, & Oberauer, 2013, 2015; Lewandowsky, Oberauer, & Gignac, 2013). While the effect of conspiratorial thinking on climate change attitudes pales in comparison to that of partisanship, the effect is nonetheless pernicious.

Conspiracies are plans carried out in secret by small groups of powerful people that do harm to the common good. Conspiracy *theories*, by contrast, are unsubstantiated explanations of events or circumstances that accuse powerful malevolent groups of plotting in secret for their own benefit against the common good (Lewandowsky, Lloyd, & Brophy, in press; Levy, 2007; Popper, 1972; Uscinski & Parent, 2014). Theories claiming that climate scientists purposely fake data to receive research funding, or that climate change is a hoax perpetrated by leftist radicals to undermine local sovereignty, are conspiracy theories (Douglas & Sutton, 2015). While figures vary across polls, a significant segment of U.S. residents, for example, endorse the idea that climate change is a conspiracy. Lewandowsky, Gignac, et al. (2013) find that 20% of respondents believe climate change "is a hoax perpetrated by corrupt scientists who wish to spend more taxpayer money on

climate research.” Other U.S. polls find that 37% of respondents believe that “global warming is a hoax,” and 41% say that it is definitely or possibly true that “global warming is a myth concocted by scientists” (Cassino, 2016; Polling, 2013).

Depending largely on one’s point of view, conspiracy theories can be amusing, exasperating, or even true. While public opinion has bent in favor of the scientific consensus, those who continue to deny climate science—in part by invoking conspiracy theories—have been instrumental in blocking policies intended to mitigate the effects of climate change.

This article begins by defining critical terms in the study of conspiracy theories. We then argue that conspiracy theories can hinder both the collective and individual actions needed to address climate change. Then, to place climate change conspiracy theories into context, we expound upon other instances where conspiracy theories have challenged known scientific consensus. We then take stock of the literature on climate denial and where conspiracy theories and conspiratorial thinking fit into that literature. To conclude, we discuss future avenues for research.

Our purpose is to educate those interested in climate change communication about the vast literature on conspiracy theories, and how this literature can inform research on climate communication specifically, and science communication more generally. In undertaking this task we must note that combating climate change is a global responsibility; however, the majority of the research we distill comes from the United States and other Westernized nations. Every effort is made to synthesize studies from other regions where possible, but the available data base is heavily skewed toward Western societies.

Drilling Down on Definitions

This section defines the term *conspiracy theory* and its variants. Definitions are particularly important in the study of conspiracy theories, where truth is often in dispute and popular definitions vary widely across use. In both popular rhetoric and scholarly discourse, arguments often “rest upon how we define what gets counted both as a ‘conspiracy’ and a ‘conspiracy theory,’” and such arguments often tend to “rest upon shaky assumptions” (Dentith, 2016). Just the simple use of the term *conspiracy theory* evokes strong emotional responses (Husting & Orr, 2007); therefore our terminology is intended in the most neutral way and without pejorative connotation. Researchers from the varied disciplines have yet to coalesce around a set of shared terms, and in this section we make every attempt to be inclusive with our definitions and with our terminology. We note that the terms used to describe contrarian opinions (e.g., skepticism, denial) are also controversial and evolving (Howarth & Sharman, 2015). This section will show that conspiracy theories are unique from other types of theories, particularly scientific theories.

Conspiracy

We define *conspiracy* as a secret arrangement between two or more actors to usurp political or economic power, violate established rights, hoard vital secrets, or unlawfully alter government institutions in such a way as would benefit themselves at the expense of the common good

(Keeley, 1999; Pigden, 1995, p. 5, Uscinski & Parent, 2014, pp. 31–35). Conspiracies, such as Watergate and Iran–Contra, do happen, but because of the difficulties inherent in executing plans and keeping quiet, they tend to fail (Dai & Handley–Schachler, 2015; Grimes, 2016; Keeley, 1999; Popper, 1972). For example, as the size of a scheme increases, “intrinsic failure [becomes] imminent even with the most generous estimates for the secret-keeping ability of active participants” (Grimes, 2016). And because conspiracies fail and are exposed, they become deemed by the appropriate epistemological institutions as having actually occurred. Thus, *conspiracy* refers to real, actual events.

Conspiracy Theory

We define *conspiracy theory* as an explanation of historical, ongoing, or future events or circumstances that cites as a main causal factor a small group of powerful persons, the conspirators, acting in secret for their own benefit or against the common good (Aaronovitch, 2010; Coady, 2003; Keeley, 1999). The plot could be driven by foreign or domestic governments, non-governmental actors, scientists, religious and fraternal organizations, or any other group perceived as powerful and treacherous (Uscinski & Parent, 2014).

While *conspiracy* refers to actual events, *conspiracy theory* refers to an accusatory perception that may or may not be true. Telling the difference is sometimes difficult, and epistemologists have yet to settle on a standard test by which to distinguish them (Buenting & Taylor, 2010; Clarke, 2002, 2006, 2007; Coady, 2003, 2006; Keeley, 1999, 2003; Shermer, 2010; Uscinski & Parent, 2014). Some philosophers suggest dismissing conspiracy theories out of hand (Cassam, 2016; Mandik, 2007, Popper, 1966, 1972), but others argue there is nothing necessarily wrong with conspiracy theories (Basham, 2003; Coady, 2003, 2006; Dentith, 2014, 2016; Pigden, 1995). For example, philosopher Matthew Dentith (2016) argues that “it is not clear that conspiracy theories are *prima facie* unlikely,” and therefore it may be rational to entertain them.

Perhaps the best standard for differentiating between *conspiracy* and *conspiracy theory* is put forward by Neil Levy (2007). Levy argues that properly constituted distributed networks of inquirers trained in assessing knowledge claims, with methods and results made public and available for scrutiny, are best suited for determining the existence of conspiracies. For example, theories suggesting that President John Kennedy was killed as part of a conspiracy, as opposed to by a lone gunman, are conspiracy theories because they have not been adopted by the proper epistemic authorities. Theories that challenge the current scientific consensus on climate change fall into the *conspiracy theory* category also because there is no institution fitting Levy’s definition that has found evidence of such a conspiracy. The proper epistemological authority on climate change—climate scientists—overwhelmingly contend that anthropogenic climate change is real (Cook et al., 2016; Oreskes, 2004). In fact, the possibility of a conspiracy among climate scientists was explicitly tested by numerous public bodies around the world in connection with the “Climategate” imbroglio in 2009: At least nine independent investigations in the United States and United Kingdom consistently exonerated the climate scientists of any wrongdoing (Lewandowsky, 2014). Thus, such theories remain as *conspiracy theories*: accusatory and suspect, rather than as accepted knowledge.

There exist many theories coming from the political left that affirm global warming, but accuse the carbon-emitting industries and government of intentionally causing global warming or of stalling remedying policies for nefarious purposes. For example, some people believe that oil companies are hiding technology that could make cars run without oil (Furnham, 2013). Such theories count as conspiracy theories as well.

Because conspiracy theories address the use of power and secrecy, researchers should expect to find little evidence of their existence, and instead plenty of disconfirming evidence and red herrings (Keeley, 1999). The conspirators—if they exist and are indeed conspiring—have a vested interest in hiding their activities. Whereas in standard scientific endeavors, the subject of study is “construed as a passive and uninterested party with respect to human knowledge gathering activities, the conspiracy theorist is working in a domain where the investigated actively seeks to hamper the investigation. Imagine if neutrinos were not simply hard to detect, but actively sought to avoid detection!” (Keeley, 1999, p. 120). We should therefore expect a lack of evidence and a preponderance of disconfirming evidence to count in favor of conspiracy theories, rendering them non-falsifiable (Uscinski & Parent, 2014, p. 41). This sets them apart from other types of theories. However, this logic can be abused.

Conspiracy theorists have shown a willingness to move goal posts when confronted with disconfirming evidence, sometimes in fantastical ways (Boudry & Braeckman, 2011). When Barack Obama ran for president in 2008, some conspiracy theorists claimed that Obama was not a natural born U.S. citizen and had no birth certificate. To counter these claims, Obama released his birth certificate. Conspiracy theorists then claimed that the birth certificate was faked because it was not the “long form” birth certificate. When Obama released the long form version of his birth certificate, conspiracy theorists then claimed that that document was forged as well. Some climate change deniers claim that there exists no scientific consensus on climate change; they argue instead that the many voices of dissenting scientists are drowned out by vocal climate change ideologues (Dunlap, McCright, & Lever-Tracey, 2010). When scientists produced increasingly strong evidence that there was an overwhelming consensus among climate scientists and little real dissent (e.g., Anderegg et al., 2010; Cook et al., 2013; Cook et al., 2016; Oreskes, 2004), climate conspiracy theorists moved on to argue that the evidence showing the consensus was faked or otherwise flawed (Dunlap & McCright, 2011; Lewandowsky, Cook, & Lloyd, 2016; van der Linden, Leiserowitz, Feinberg, & Maibach, 2015).

For scientists (such as the third author) who are among the 20,000 attendees of the annual meetings of the American Geophysical Union, at which thousands of posters and talks seek to map out the future of a planet whose climate is rapidly changing, but at which neither the existence of climate change nor its human origin are debated, this rejection of the scientific consensus is particularly jarring and difficult to reconcile with a rational consideration of evidence. This rejection of strong clear evidence is one of the reasons that research into a conspiracy theory often devolves into a degenerating research program (Clarke, 2002, 2007). As Uscinski and Parent (2014) note,

when their predictions fail to materialize and corroborating evidence does not appear, [conspiracy theories] deserve withering neglect. Declaring immunity as a conspiracy theory should not confer life eternal. Conspiracy theories should be forced to make good with positive proof in a reasonable amount of time or be pitilessly abandoned.

This being said, all conspiracy theories have a better than 0 percent chance of being true; therefore researchers should not consider conspiracy theories within a true/false dichotomy. Instead, conspiracy theories should be considered in probabilistic terms: What is the likelihood that a given conspiracy theory is true? More specifically, and to the topic of this article, what is the probability that the current scientific consensus on climate change is a hoax?

The literature suggests that given the large number of scientists, agencies, institutions, and governments needed to fake climate data and analyses, the likelihood of such a scheme escaping exposure over the course of decades is incredibly low. There would be too many actors involved for the conspiracy to be successful (Keeley, 1999). Recent work in mathematics (Grimes, 2016) argues that climate denial conspiracy theories have passed the point where there is greater reason to dispose of them than there is to continue to attempt to supply evidence for them. Based on an analysis of *true* historical conspiracies (e.g., the Tuskegee syphilis experiment), and the time span for which those historical conspiracies could be kept secret, Grimes argues:

the sheer number of people required for the sheer scale of hypothetical scientific deceptions would inextricably undermine these nascent conspiracies. For a conspiracy of even only a few thousand actors, intrinsic failure would arise within decades. For hundreds of thousands, such failure would be assured within less than half a decade. It's also important to note that ... extrinsic analysis by non-participants would also increase the odds of detection, rendering such Byzantine cover-ups far more likely to fail.

Denialist conspiracy theories are most likely false because the vast number of people needed to secretly and successfully fake a climate change consensus would have either purposively or inadvertently "spilled the beans" by now. The loosely distributed networks of independent researchers and agencies that have coalesced around the scientific consensus are too porous to succeed in any endeavor that requires mendacity. Given the enormous value of information indicating a conspiracy, it would very difficult for each of a large number of conspirators to resist defection.

Conspiracy Belief

Conspiracy belief, sometimes *conspiricist belief* or *conspiratorial belief*, refers to a person's belief in a specific conspiracy theory or specific set of conspiracy theories. A large body of scholarship attempts to explain why individuals believe in specific conspiracy theories, that is, that President John Kennedy was killed by the CIA (e.g., McHoskey, 1995), or that Barack Obama was really born in Kenya (e.g., Pasek, Stark, Krosnick, & Tompson, 2014). The belief that climate change is a hoax devised for some nefarious purpose is a conspiracy belief.

Conspiracy Thinking

Social scientists are slowly moving away from studying beliefs in individual conspiracy theories toward understanding *conspiracy thinking*, sometimes referred to as *conspiratorial predispositions*, *conspiratorial thought*, *conspiracist ideation*, *conspiratorial thinking*, *conspiracy ideology*, *conspiracy mindset*, or *conspiratorial worldview*. These terms refer to an underlying worldview or predisposition, similar to political left–right ideology, toward viewing events and circumstances as the product of conspiracies (Wood, Douglas, & Sutton, 2012). Having a strong predisposition toward seeing conspiracies makes one more likely to believe in specific conspiracy theories, all else equal. Just the same, a person with a weak predisposition toward seeing conspiracies is likely to be more resistant to conspiratorial logic and therefore less likely to believe in specific conspiracy theories, all else equal.

This concept draws on traditional theories of public opinion in political science that incorporate predispositions into explanations of information reception (Berinsky, 2009; Zaller, 1992). In writing about information, predispositions, and opinion, Zaller (1992, p. 6) argues: “Every opinion is a marriage of information and predisposition: information to form a mental picture of the given issue, and predisposition to motivate some conclusion about it.” He goes on to state (p. 22) that “[Citizens] possess a variety of interests, values, and experiences that may greatly affect their willingness to accept—or alternatively, their resolve to resist—persuasive influence.” Just as citizens interpret events and circumstances with their underlying political predispositions such as partisanship and political ideology (Berinsky, 2007, 2009, 2017; Campbell, Converse, Miller, & Stokes, 1960; Converse, 1964; Gerber & Huber, 2010; Gerber, Huber, & Washington, 2010; Zaller, 1992), citizens also interpret the world through their underlying view about how much conspiracies determine events and circumstances (Brotherton, 2015; Brotherton, French, & Pickering, 2013; Bruder, Haffke, Neave, Nouripanah, & Imhoffet, 2013; Dagnall, Drinkwater, Parker, Denovan, & Parton, 2015; Imhoff & Bruder, 2014; Lantian, Muller, Nurra, & Douglas, 2016; Swami et al., 2011; van der Tempel & Alcock, 2015; Uscinski & Parent, 2014). Many social scientists studying conspiracy *beliefs* have alluded to such a framework (Berinsky, 2012, p. 8; Goertzel, 1994, p. 13, Lewandowsky, Oberauer, et al., 2013; Oliver & Wood, 2014a, p. 964; Uscinski & Parent, 2014, pp. 17–20, 75; Wood, Douglas, & Sutton, 2012, p. 771).

Conspiracy thinking can be thought of as a bias against powerful actors that leads people to accuse those actors of collusion (Brotherton, 2015; Brotherton et al., 2013; Imhoff & Bruder, 2014; Wood et al., 2012). It occupies its own dimension of opinion and is spread evenly across political ideology and partisanship (Uscinski, Klofstad, & Atkinson, 2016; Uscinski & Parent, 2014). This concept of conspiracy thinking is new and critiques are likely forthcoming; other conceptions suggest that conspiracy thinking is monological (Goertzel, 1994; Sutton & Douglas, 2014).

An underlying predisposition toward conspiratorial thinking explains three major facets of conspiratorial beliefs. First, it explains why in an information environment in which “evidence” for conspiracy theories is widely available, the number of conspiracy theories each person believes varies greatly (e.g., Goertzel, 1994; Miller, Saunders, & Farhart, 2016; Oliver & Wood, 2014a, 2014b; Uscinski, Klofstad, & Atkinson, 2016). It is more difficult to convince a person with low levels of conspiratorial thinking that a conspiracy theory is true than a person with higher

levels of conspiratorial thinking. Second, it explains why people believe theories that are logically contradictory (e.g., believing Osama Bin Laden is still alive but also believing he was dead before the raid on his compound) (Wood et al., 2012). Third, it explains why authoritative information is often unable to dissuade people from their conspiracy beliefs (Nyhan, 2010; Nyhan & Reifler, 2010; Nyhan, Reifler, & Ubel, 2013). Underlying dispositions drive conspiracy beliefs more so than does evidence.

Researchers have yet to fully determine the factors that cause individuals to possess particular levels of conspiratorial thinking. Some suggest that political socialization plays a large role (Uscinski & Parent, 2014), much the way many researchers argue partisanship and ideology are determined by processes occurring during one's formative years (Campbell et al., 1960; van Deth, Abendschön, & Vollmar, 2011; Ehman, 1980; Jennings & Markus, 1984; Niemi & Hepburn, 1995; Sears, 1990; Travers, 1983). Avery (2006), for example, suggests the role of socialization in driving conspiracy thinking when examining the distrust of government that exists in the African-American community and Swami et al. (2016) find that stressful life events from the past (i.e., serious illness, injury, or assault) predict belief in conspiracy theories.

Underlying psychological factors may also play a role beyond socialization. A person's level of conspiracy thinking could be determined by schizotypy and delusional ideation, among others, which could overwhelm socialization processes (Dagnall et al., 2015; Darwin, Neave, & Holmes, 2011; Freeman & Bentall, 2017; Swami, Chamorro-Premuzic, & Furnham, 2010; Whitson & Galinsky, 2008). In any case, social scientists have devoted little effort to tracking the development of conspiratorial thinking over time, but such longitudinal studies could shed light on how it develops.

In addition to driving belief in specific conspiracy theories, an underlying predisposition toward seeing conspiracies can influence non-conspiracy opinions toward science and policy. This is important because most surveys ask respondents if climate change is a serious problem or not; very few surveys ask specifically if climate change is some form of conspiracy. While a significant portion of those polled (particularly in the United States and Australia) claim to believe that climate change is not happening, we should not assume this belief is equivalent to believing in a climate change conspiracy. A person could see debate about the topic in the media, get the impression that the science is divided, and choose the dissenting side in a contentious debate (Howarth & Sharman, 2015). For example, if one were to argue that money had affected the science, there is not necessarily a conspiracy embedded in that argument. This could, of course, be an allegation of conspiracy that a group of moneyed interests had paid scientists to fabricate results. But it could also be that moneyed interests had unknowingly and inadvertently warped the science without intending to do so. It's not far-fetched to suggest that scientists could unconsciously bias their findings in a way that would please a funding agency; and this would not be a conspiracy because no one would be conspiring to do anything improper.

With this said, recent studies by Lewandowsky and colleagues suggest that underlying conspiratorial thinking does indeed drive the rejection of the scientific consensus on climate change (cf. Dixon & Jones, 2015; Lewandowsky et al., 2015; Lewandowsky, Gignac, et al., 2013, 2015; Lewandowsky, Oberauer, et al., 2013). Lewandowsky, Gignac, et al. (2013) show that even

though surveys measuring belief in climate change do not ask specifically about conspiracy beliefs, those respondents that deny climate science are driven to do so by their underlying conspiratorial thinking (or *conspiracist ideation*, as they term it). While many climate change deniers might not believe in specific climate change conspiracy theories, they are still coming to their denialism because of their underlying conspiracy thinking.

We should also note that people could adopt conspiratorial beliefs without underlying conspiratorial thinking playing a role. For example, if Republican Americans were to listen to their party elites, conservative talk shows, or other conservative media discuss climate change, it is very likely that they could be exposed to conspiracy theories (e.g., Inhofe, 2012). A person with little information on the topic might take such assertions at face value, and many studies show that exposure to materials espousing conspiracy rhetoric induces conspiracy beliefs (Banas & Miller, 2013; Butler, Koopman, & Zimbardo, 1995; Einstein & Glick, 2015; Mulligan & Habel, 2013; Stempel, Hargrove, & Stempel, 2007; Uscinski, Klofstad, & Atkinson, 2016). Therefore, people can come to believe in conspiracy theories the same way people come to believe in other non-conspiratorial opinions: by accepting information from trusted elite sources (Zaller, 1992). This is the way that many people who believe in climate change came to have that opinion.

Conspiracy Talk

The core concepts in this article are thoughts and beliefs, but these are difficult to observe directly. One may believe that the United Nations is using carbon regulation to subjugate the United States under totalitarian-communist rule, but if that belief were not expressed in some way, it would be socially sterile. *Conspiracy talk* or *conspiracy discourse* is recorded public discourse, spoken, written, or otherwise expressed, which seeks to discuss or spread conspiracy theories. Researchers often measure beliefs and thinking by asking respondents if they believe in particular conspiracy theories or by asking questions that tap into conspiratorial worldviews. Another way to assess conspiratorial thought or beliefs is through public statements, such as letters to the editor or comments in online forums. For example, Uscinski and Parent (2014) examined letters to the editor of the *New York Times* for evidence of conspiracy talk, and Wood and Douglas (2013) compared online comments made by conspiracy theorists and “conventionalists.”

Perhaps the most telling study of conspiracy talk is by Lewandowsky, Cook, Oberauer, and Marriott (2013) and Lewandowsky, Cook, et al. (2015). They examined the online comments that were made in response to their previous 2013 paper, “NASA Faked the Moon Landing—Therefore (Climate) Science Is a Hoax: An Anatomy of the Motivated Rejection of Science” (Lewandowsky, Oberauer, et al., 2013). The authors noted that the study elicited an inordinate amount of controversy for an academic paper, and in measuring the commentary, they found much of it to contain conspiracy talk. For example, commenters accused Lewandowsky and his colleagues of faking data to make climate denialists look irrational. The analysis of these online criticisms and accusations of conspiracy became the basis of a published paper, “Recursive Fury: Conspiracist Ideation in the Blogosphere in Response to Research on Conspiracist Ideation.” The paper was

retracted by the publisher (conspiracy theorists had threatened to sue); the paper was later retitled, additional data were reported, and it was re-published in 2015 in a different journal (Lewandowsky et al., 2015).

One reason why conspiracy theorists in the “Recursive Fury” episode were so anxious about being identified as engaging in conspiratorial discourse could be that conspiracy theories, particularly in the United States and other Western nations, have amassed a poor reputation. *Conspiracy theory* and its variants are often used as a term of derision and exclusion (Husting & Orr, 2007). Just the labels *conspiracy theorist* and *conspiracy theory* can neutralize and delegitimize a person or idea by signaling that they are out of the bounds of rationality (Hall, 1970; but see Wood, 2016, for a different account). This often leads people to deny that their ideas are conspiracy theories even though they clearly qualify.

The bad reputation of conspiracy theories also leads them to be muted in polite discourse—and because of that, conspiracy theories have found a stronghold on the Internet, particularly in anonymous forums. The climate change debate is an outlier in this regard, in that conspiratorial rhetoric is ubiquitous (Boussalis & Coan, 2016; Bricker, 2013; Dunlap & Jacques, 2013; Elsasser & Dunlap, 2012; Jacques, Dunlap, & Freeman, 2008; McCright & Dunlap, 2000, 2003, 2010; Martin & Rice, 2014; Shapiro & Park, 2015; Sharman & Howarth, 2015). The use of such conspiracy-laden discourse may lead to downstream negative effects both for science, society, and the environment (Douglas & Sutton, 2015; Jolley & Douglas, 2014a, 2014b; van der Linden, 2015), and this is the starting point of our next section.

Why Are Conspiracy Theories About Climate Change Important?

People are free to believe what they wish about climate change—whether it is real and a major threat, or just a hoax. Opinions—whether conspiracy theories or not—have no impact on the Earth’s climate. Actions are what matter. This section demonstrates four links between opinions on climate change and actions that mitigate or exacerbate the dangers of climate change: (1) the link democracy creates between public opinion and public policy, (2) the link between climate change opinions and individual actions, (3) the link between climate change rhetoric and the conduct of science, and (4) the link between conspiracy accusations and political stalemate.

The Link Between Public Opinion and Policy

Democracies function best when voters make rational decisions. If a significant portion of voters make decisions based upon erroneous beliefs, then all suffer the consequences (Caplan, 2011). For example, if voters choose policies or representatives based on conspiratorial beliefs, those beliefs will then be acted on with the force of government (Uscinski, 2016). To name a few examples, conspiracy theories about Jews and Muslims have led to extreme political parties, state-sanctioned discrimination, and in some cases violence (Bilewicz & Krzeminski, 2010; Bilewicz, Winiewski, Kofta, & Wójcik, 2013; Fekete, 2012; Kofta & Slawuta, 2013; Nefes, 2013). In South Africa, government officials adopted HIV science conspiracy theories and, as a result, blocked the use of medical treatments that could have saved a third of a million lives (Grebe & Nattrass, 2012;

Nattrass, 2012, 2013). In the United States, conspiracy theories about communist infiltration led to a congressional witch hunt and a mass violation of rights in the 1950s (Knight, 2002; Schmidt, 2000). Similarly, climate change conspiracy theories have driven governments to stall or even drop previous commitments to battle climate change (Krause, 2015). The democratic links between mass opinion and policy allow a conspiracy-believing public to steer policy away from addressing climate change (Douglas & Sutton, 2015).

The Link Between Climate Change Opinions and Individual Action

Individuals can act on their beliefs, and the extant literature demonstrates that individuals who believe in specific conspiracy theories or who are prone to conspiratorial thinking behave in observably different ways from those who do not. Those exhibiting high levels of conspiratorial thinking are less likely to engage in political behaviors such as voting, registering, donating, putting up yard signs, or attending political meetings (Uscinski & Parent, 2014). Those believing in anti-vaccine or other conspiracy theories that impugn modern medicine are less likely to vaccinate their children, get influenza shots, use sunscreen, or go for annual check-ups (Craciun & Baban, 2012; Jolley & Douglas, 2014a; Lewandowsky et al., 2012, Oliver & Wood, 2014b). They are also likely to seek alternative medical treatments and avoid traditional medicine (Oliver & Wood, 2014b). African Americans who believe in sterilization or HIV conspiracy theories are less likely to use contraceptives (Bird & Bogart, 2003). Perhaps most disturbingly, those who have a strong disposition toward conspiracy thinking have been shown to be more accepting of violence (Uscinski & Parent, 2014, p. 98) and of conspiring to achieve ends (Douglas & Sutton, 2011).

In the case of climate change conspiracy theories, van der Linden (2015) shows that exposure to climate change conspiracy theories can lead people to reject pro-social behaviors such as signing petitions, donating, or volunteering. Jolley and Douglas (2014b) show that exposure to climate conspiracy theories can diminish people's intentions to reduce their personal carbon footprint. These findings are particularly important because they demonstrate a clear link between the toxic conspiracy discourse and subsequent deleterious behavior.

The Link Between Climate Change Opinions and the Conduct of Science

Just mere exposure to denialist conspiracy theories (i.e., those accusing scientists of faking data, shilling for nefarious interests, or of lying for personal gain) can compromise how scientists conduct and communicate climate science. Lewandowsky, Oberauer, et al. (2015, p. 1) argue that "in response to constant, and sometimes toxic, public challenges, scientists have over-emphasized scientific uncertainty, and have inadvertently allowed contrarian claims to affect how they themselves speak, and perhaps even think, about their own research." They go on to argue that when scientists are asked to rebut denialist viewpoints, "they often do so within a framing and within a linguistic landscape created by denial, and often in a manner that reinforces the contrarian claim." This "seepage," as they term it, may lead climate scientists to understate the severity of the climate problem both in their discourse and in their research reports (see also Brysse, Oreskes, O'Reilly, & Oppenheimer, 2013; Freudenburg & Muselli, 2010). Farnsworth and

Lichter (2012, pp. 98–99) in a survey of scientists found that the “perceived pressure to alter one’s views had an independent effect on assessments of global warming. Scientists who said they had been pressured to downplay the results of global warming in public rated the likely effects of global warming as slightly less severe than did other scientists.”

“Seepage” may occur inadvertently and have an insidious effect. For example, in attempting to answer “honest” questions from people with denialist perspectives, climate scientists may inadvertently accept the biasing terms in which those questions are framed (Lewandowsky, Oberauer, et al., 2015). Consider a question such as “How do we know that global warming isn’t caused by the sun?” A researcher might be inclined to engage such a question as if the effect of the sun on global warming was a “to-be-explained” phenomenon, when in reality it is not (Lewandowsky, Oberauer, et al., 2015).

Additionally, conspiratorial rhetoric can (1) threaten the self-image of scientists, thereby negatively affecting scientists’ performance and opinions; (2) lead scientists to underestimate the support for their own opinions, potentially leading them to soften or abandon their views; and (3) make scientists susceptible to arguments they know are false (Lewandowsky, Oberauer, et al., 2015). Discourse that accuses scientists of fraud or conspiracy may pervert the science and lead to incomplete estimates of the dangers stemming from climate change.

The Link Between Conspiracy Accusations and Political Stalemate

Even though conspiracy theories are mostly harmless, extreme manifestations in democracies can hinder compromise, respect, and debate, making policy solutions impossible. If one is convinced that their opponents are conspiring against them, negotiation is very difficult, if not impossible. Uscinski and Parent (2014, p. 162) point to the congressional impasse on health care reform, which was plagued by conspiracy theories about “death panels”:

While both sides of the aisle have identified problems in the law requiring legislative fixes, Republicans cannot compromise on a bill potentially containing death panels. Ironically, this has led the administration to delay, change, and waive major parts of the legislation unilaterally (some say, conspiratorially).

Conspiracy theories have obstructed climate change legislation also. During the Obama administration, the Republican-controlled Congress was unwilling to address climate change, therefore President Obama acted unilaterally to limit carbon emissions. This was seen by some as a conspiracy in itself, to grab power from behind the back of Congress.

The involvement of conspiracy theories resolves an apparent conundrum, namely the staunch opposition by climate denial organizations—for example, various think tanks and policy fora, such as the Cato Institute or the Heartland Institute—to market-based climate mitigation policies. At first glance, if opposition to climate policies is largely driven by a perceived threat to free market worldviews, why would this opposition extend to solutions such as carbon markets that, at least at first glance, meet the economic and political imperatives of free market liberalism? The answer is that conspiracy thinking drives deniers to oppose any solution,

regardless of whether it fits with their other ideological demands or not. In an examination of opposition to free market solutions (i.e., carbon markets) to climate change, Bohr (2016) identifies a strong conspiratorial undercurrent arising from the fact that academia is not itself a free market environment. Some deniers argue that the scientific knowledge produced in the current academic environment is a tool for “collectivist” coercive policies. From this perspective, academic scientists, regulators, political activists, and even businesses that may profit from climate mitigation (e.g., the solar industry) have created a “climatism cartel” that unnecessarily imposes social costs on all citizens by increasing energy prices. This conspiracy-laden line of reasoning was also used by the tobacco industry: It referred to medical research on the health effects of smoking in internal documents as “a vertically integrated, highly concentrated, oligopolistic cartel” which in combination with “public monopolies ... manufactures alleged evidence, suggestive inferences linking smoking to various diseases, and publicity and dissemination and advertising of these so-called findings” (Apt, 1983, p. 126). The same conspiratorial language has been found to be endemic in climate-denying discourse as well (Lewandowsky, Cook, et al., 2015). Although this discourse is likely triggered by challenges to free market and other worldviews, Bohr’s (2016) analysis suggests that it is unlikely that it can be ameliorated by framing solutions to climate change within ostensibly “free market” or other terms (e.g., Kahan, Jenkins-Smith, Tarantola, Silver, & Braman, 2012a). The conspiracy element of denial stymies attempts at deliberation, negotiation, and action.

Conspiracy Theories in Science

Climate change is not the only scientific consensus challenged by conspiracy theories—conspiracy accounts frequently challenge scientific expertise, sometimes with deleterious consequences (Diethelm & McKee, 2009; Goertzel, 2013). Science-challenging conspiracy theories can largely be divided into two types: those that accuse industry, corporations, and other free market institutions; and those that accuse government (for more on the tension between these two, see Moore, 2016). Such conspiracy theories often mask broader political critiques because proponents find it advantageous to attack specific scientific findings rather than to attack arbitrary ideas like capitalism or socialism (e.g., Rothman & Lichter, 1987; Schurman, 2004). For that reason, political ideology often predicts which conspiracy theories one will believe in, a point we will return to later.

Conspiracy theories that accuse large industries (i.e., the medical, bio-tech, agriculture, energy) tend to accuse them of reaping huge profits at the expense of the greater good. For example, during the H1N1 outbreak of 2009, a narrative emerged suggesting that the media and pharmaceutical companies were conspiring to increase fear and subsequently profits (Wagner-Egger et al., 2011). Groups in the United States and South Africa have challenged the science of AIDS and HIV claiming that the link between them is not real, that pharmaceutical companies are defrauding people with phony drugs, and that HIV can instead be cured with massage and vitamins (Nattrass, 2012, 2013). Conspiracy theories about hydraulic fracking and shale oil have fueled opposition to the practice (Lynch, 2017), particularly in New York State. Conspiracy theories about genetically modified food (GMO) usually claim that a bio-tech corporation called

Monsanto is engaged in a plot to overtake the agriculture industry with poisonous food (Goertzel, 2013). These conspiracy theories have played a large role in the crafting of policies that inhibit the use of GMO for human consumption (Harmon, 2014). Interestingly, anti-GMO conspiracy theories sometimes drift from corporate malfeasance to agency capture, one-world government, and population control (Uscinski & Parent, 2014, pp. 147–148); for this reason, anti-GMO conspiracy theories have attracted supporters from both the left and the right. Anti-vaccine conspiracy theories contend that vaccine manufacturers are hiding the negative side effects of immunization in order to reap huge profits (Briones, Nan, Madden, & Waks, 2011; Goertzel, 2013; Guidry, Carlyle, Messner, & Jin, 2015; Kata, 2010; Madden, Nan, Briones, & Waks, 2012; Oliver & Wood, 2014b). Many “anti-vax” conspiracy theories accuse government of hiding the negative effects of vaccines as well, and much like anti-GMO conspiracy theories have attracted adherents on the right.

Conspiracy theories that accuse government of perverting science often view the conspirators as having socialist or totalitarian aims. Some Americans, Canadians, and others have objected to the government inclusion of fluoride into drinking water (Carstairs & Elder, 2008; Newbrun & Horowitz, 1999; Oliver & Wood, 2014b). They argued first that there was a conspiracy of silence to hide the negative side effects from an unsuspecting public (Connett, Beck, & Micklem, 2010), but also that fluoridation was

the first step in a growing expansion of government control over an individual’s life, part of a trend in America toward socialism or totalitarianism ... once the precedent was set for using public drinking water to medicate the population, the government would argue for the addition of birth control medication, or sedatives or an “anti-hostility” drug.

(Reilly, 2006, p. 329)

Other theories argue that fluoridation was intended “to weaken the immune systems of the population in order to ultimately reduce the population, as well as lowering energy and mental clarity in order to prevent dissent” (Robertson, 2015, p. 92). Other conspiracy theories invoking science have accused governments of secretly controlling the weather, developing and using mind control, inventing “ghost” technology that can enable invisibility or time travel, and instituting eugenics (Knight, 2003).

Climate change denialist conspiracy theories often follow the same logic as other conspiracy theories accusing government. These conspiracy theories make a series of interrelated and often interchangeable claims: (1) that ideological organizations, including government, have used grant money to pervert the science; (2) that the peer-review process has become tainted by an oligarchy of scientists seeking to suppress dissent; (3) that climate science is less about science and more about socialist ideology; and (4) that larger international groups have faked climate science as a scheme to achieve global wealth redistribution or one-world government (Douglas & Sutton, 2015; Goertzel, 2010, 2013; Hurley & Walker, 2004).

We note again that while the political right is generally responsible for conspiracy theories that call into question the legitimacy of climate science, the political left is not immune to believing in conspiracy theories generally (Miller, Saunders, & Farhart, 2016; Oliver & Wood, 2014a), or conspiracy theories accusing big business (Uscinski & Parent, 2014) and carbon-emitting industries specifically (Furnham, 2013). It should come as no surprise then that the frustration at not adopting more policies aimed at combating climate change has driven the left to conspiracy theorize about the motivations and tactics of those that oppose such policies (Douglas & Sutton, 2015). Conspiracy theories on the left range from illicit profiteering to population control. David Runciman (2015) also observes that the conspiracy trope is used by those who believe in climate change:

Climate sceptics routinely deploy terms like ‘hoax’, ‘scam’, ‘cover-up’ and ‘deception’ to describe what they are up against. *The Greatest Hoax: How the Global Warming Conspiracy Threatens Your Future* is the entirely typical title of a book by U.S. Senator James Inhofe. *The Propaganda Bureau, The Deliberate Corruption of Climate Science* and *Watermelons: How Environmentalists are Killing the Planet, Destroying the Economy and Stealing your Children’s Future* are just a few of the others. The familiar tropes of conspiracy theory crop up all the time in these accounts: climate scientists are portrayed as a mafia, ... the mainstream media is accused of peddling ‘Goebbels-esque’ propaganda, and anything faintly redolent of a cover-up gets a –gate tacked onto the end ... But the accusations go both ways. Just as its critics see the environmental lobby as a front for big government and grant-guzzling scientists, so environmentalists see their critics as a front for the oil industry. Climate skepticism is regularly characterized as a put-up job, modelled on the nefarious practices of big tobacco. *Merchants of Doubt: How A Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* is another typical (and best-selling) book title. All the tropes of conspiracy theory are in place here too: it’s a small group of renegades, operating behind the scenes, in the pay of larger forces, covering up the truth.

We do not suggest that climate-denying conspiracy theorists and climate change believing conspiracy theorists are morally equivalent or have equal footing with the truth. Carbon-emitting industries *did* fund initiatives to sway both elite and public opinion in their favor as a way to stall legislation that would potentially hurt them. This, however, is a normal activity in a pluralistic society: Interests fight for legislation that favors them. Pointing out those activities or analyzing their contribution to current political discourse in a scholarly manner has nothing to do with conspiracy theorizing. However, conspiracy theorists sometimes build on the factual activities of the carbon-emitting industries in fantastical ways, suggesting evil intentions or plans that go beyond protecting the industry from further regulation, such as population control or world domination.

Political ideology (left-right) is a strong predictor of which particular conspiracy theories a person will adopt. As public opinion experts Herbert McClosky and Dennis Chong (1985, p. 36) argue, each side is motivated to accuse the other, and rarely itself.

Despite the suspicions of both the left and right towards the government, their anti-system responses are usually triggered by different issues. In responding, for example, to a series of items concerning the influence of the wealthy and powerful on the courts, the nation's laws, the newspapers and the political parties, the far left was the most willing of the ideological groups to condemn these institutions as pawns of the rich. None of this is surprising, of course, since hostility to capitalist elites and the establishment has long been a dominant feature of radical-left politics. But the radical right is also disenchanted with these institutions, though for different reasons. Its anger is detonated, not by the institutions' alleged association with wealth or "business," but by their supposed susceptibility to the influence of an entrenched liberal establishment. In their view, government offices, the press, the foundations and other powerful institutions are overflowing with technocrats and academics trained at liberal colleges and universities. These universities are also the "farm system" that stocks the judiciary and various other professions.

It should therefore come as little surprise that the left and right have in general adopted the conspiracy theories that they have. Because people want their views to harmonize, the same information may affect different people in different ways. Therefore, for example, if a Democrat were told that powerful political actors were conspiring against them, they would be more likely to accept that information if it was made clear that the conspirators were Republicans, big corporations, and the rich: not fellow Democrats. Ideologies therefore supply an important piece of the puzzle.

There are a few important points to come from the extant literature on beliefs about science. First, people on both left and right are capable of rejecting scientific findings that do not comport with their ideologies. Lewandowsky and Oberauer (2016) argue that "at present, rejection of scientific findings by the U.S. public is more prevalent on the political right than the left. Yet the cognitive mechanisms driving rejection of science, such as the superficial processing of evidence toward the desired interpretation, are found regardless of political orientation." Second, the political right (in the United States) does appear to be less trusting of *scientists* than do the left (Hamilton, 2015). However, and third, most people pick and choose which scientific consensus, findings, and advances they will accept or reject (Nisbet, Cooper, & Garrett, 2015). Accepting the scientific consensus on climate change does not mean that one will accept the consensus views on vaccines, for example. This becomes a problem for those seeking to remedy global warming: Partial solutions such as the use of nuclear power or genetically modified crops are not politically viable among some climate activists partially because of conspiracy beliefs.

Later in this article we will discuss how partisan elites organized public opinion toward climate change in the United States. What makes climate science different than other sciences is that political elites have vocally taken sides; other scientific issues often do not receive so much attention from political elites. Genetically modified foods and vaccines have not been the subjects of high-profile partisan debates. For example, in discussing conspiracy theories aimed at GMOs, Goertzel (2010, p. 498; Schurman, 2004, p. 252) points out that the "anti-GM movement in Europe was mobilized largely by anti-capitalist, anti-corporate and anti-American activists who found it more effective than attacking corporate capitalism directly." Despite this, the anti-GMO

movement has, over time, been able to garner larger support in the United States, and has attracted supporters from the political right as well. A poll in 2001 showed that Democrats were far more likely than Republicans to say GMO foods are unsafe to eat (Langer, 2001). Fifteen years later, however, Democrats and Republicans harbor similar skepticism of GMO foods (Erbenraut, 2016; Lewandowsky, Gignac, et al., 2013). We surmise that one reason for this is that there has been little organized pushback from Republican or conservative elites against the anti-GMO movement in the same way there is pushback by the Democratic Party and many environmental organizations against climate change denial. The Republican Party and other conservative information sources have not communicated a strong pro-GMO stance; therefore there are few cues in Republicans' information environments touting the safety of GMOs. Also, Republicans with a conspiratorial mindset may be drawn to the anti-GMO movement because they might be prone to reject the scientific consensus or other official narratives (Wood, Douglas, & Sutton, 2012), or are attracted to the conspiracy rhetoric coming from the anti-GMO movement. With this said, the activists and organizations committed to the anti-GMO movement in the United States remain largely associated with the left (Harmon, 2014; Kloor, 2012), and the movement has had its biggest victories in U.S. states that lean strongly to the left (i.e., GMO labeling laws have been passed in Vermont). With this in mind, the question of why climate change became such a contentious debate, and therefore a target for conspiracy theories, arises. This is where our next section begins.

Why Do People Deny Climate Science?

Since the mid-1990s, scholars have documented opinions towards anthropogenic climate change (Capstick, Whitmarsh, Poortinga, Pidgeon, & Upham, 2015; Dunlap & McCright, 2008; Howe, Mildenberger, Marlon, & Leiserowitz, 2015; Nisbet & Myers, 2007). Social scientists have identified a number of minor factors that predict the wax and wane of climate change attitudes over time, including the local weather (Krosnick, Holbrook, Lowe, & Visser, 2006) and economic conditions (Scruggs & Benegal, 2012). Distance to the shore has also been found to affect climate attitudes (Milfont, Evans, Sibley, Ries, & Cunningham, 2014). Thinking that perhaps science illiteracy drove climate change denial, social scientists investigated this possible link and found that science literacy, technical reasoning, and education are not strong predictors of climate change attitudes (Kahan et al., 2012b; Whitmarsh, 2011; Zhou, 2015). The inability to grapple with the scientific method or with the methods used by climate scientists does not seem to lead to climate change denial or conspiracy theorizing on the subject.

The most important predictors explaining the rejection of climate change appear to be underlying predispositions (Kahan, 2013; Kahan et al., 2011; Kahan et al., 2012b; Leiserowitz, 2006; McCright & Dunlap, 2011; Poortinga, Spence, Whitmarsh, Capstick, & Pidgeon, 2011; Whitmarsh, 2011). Traditional theories of public opinion which incorporate predispositions into explanations of information reception (Berinsky, 2007, 2009; Zaller, 1992), therefore become particularly valuable. Two people with different ideologies will interpret the same information in very different ways (Jerit & Barabas, 2012; Kunda, 1990; Lodge & Taber, 2013; Taber & Lodge, 2006). This phenomenon has been observed with conspiracy theories as well: People's conspiracy beliefs

tend to coincide with their political and other ideologies (Hartman & Newmark, 2012; Miller et al., 2016, Nyhan, 2009; Oliver & Wood, 2014a; Pasek, Stark, Krosnik, & Tompson, 2014; Uscinski et al., 2016; Uscinski & Parent, 2014). For example, those who hold “new age” beliefs are more likely to believe in Da Vinci Code theories (e.g., the idea that Jesus’s progeny is alive today) while devout Catholics are less likely to accept the idea that Jesus fathered a child with a prostitute (Newheiser, Farias, & Tausch, 2011).

While underlying ideologies and values clearly affect how information is interpreted, they do not account for the larger context in which political and media elites “cue” the masses by helping them connect information and issue positions to their underlying ideologies and values (Zaller, 1992). Partisanship is one pathway in which elites connect information to ideology for the masses: Parties are organizations with networks of elites who have the ability to reach the masses with their agendas (religion, for example, can also provide a similar organization of elite opinion leaders).

When an issue becomes politicized, party elites take positions opposite each other. Partisan masses then organize their opinions around the cues they receive from party elites through the media. For example, consider that when Republican Herman Cain ran for president in 2011–2012, his successful stewardship as CEO of Godfather’s Pizza was one of his primary talking points. Coincidentally, YouGov’s BrandIndex had been surveying the public about Godfather’s brand favorability. When Cain’s campaign began, Republicans and Democrats viewed the pizza chain similarly, but as the country learned of his involvement with it, Democrats began to view the chain more negatively while Republicans viewed it more positively (Marzilli, 2011). By the height of Cain’s popularity in late 2011, Republicans and Democrats differed by 25 points (on a scale ranging from 100 to 100) in their view of Godfather’s. Of course, the brand name and the pizza remained the same whether one identified as a Republican or a Democrat.

The influence of elite cues interacting with the masses’ underlying predispositions explains why partisans hold differing views about climate change, differing views about what conspiracies might be in play with climate change, and who the heroes and villains are in the climate debate. Even though Democrats and Republicans appear to engage in conspiracy thinking (Uscinski & Parent, 2014) and adopt conspiratorial beliefs at similar rates (Miller et al., 2016, Oliver & Wood, 2014a), Democrats have not in noticeable numbers rejected climate science or adopted denialist conspiracy theories—this is because of the messages put out by both party and media elites (Brulle, Carmichael, & Jenkins, 2012; Feldman, Myers, Hmielowski, & Leiserowitz, 2014; Nisbet, Cooper, & Garrett, 2015). By contrast, Republicans, like President Donald Trump or Senator James Inhofe, for example, communicate strongly about climate change through the media—claiming that climate change is not a real problem, that it is a hoax invented by the Chinese, that the science is contested, or that climate change is a conspiracy (see Inhofe, 2012). In short, if elites are divided on an issue, then we should expect the masses to be divided as well (Druckman, Peterson, & Slothuus, 2013; Dunlap & McCright, 2008; Saad, 2015).

In 1986 only a minority of Americans had heard of climate change but by the fall of 1988 heightened media coverage had made a majority of the public aware. By 2006 more than 90% of the U.S. public had heard of the issue (Nisbet & Myers, 2007). But, awareness is only a part of the story.

Environmental issues have historically been bipartisan and non-polarizing in the United States (think, for example, Theodore Roosevelt's role in conservation or Richard Nixon's role in creating the Environmental Protection Agency) (Dunlap & McCright, 2008). This began to change in the 1970s and more noticeably in the mid-1990s when opinions both in Congress and in the public began to polarize along party lines (Brulle et al., 2012; Dunlap, Xiao, & McCright, 2001; Hetherington, 2001; Shipan & Lowry, 2001). Historically, many issues in American politics have polarized over time (e.g., Carmines & Stimson, 1989); however, what makes climate change so interesting is that as elite and mass opinions polarized, the scientific consensus solidified (Cook et al., 2013).

Historical accounts suggest that when global warming became a major issue in the late 1980s, fossil fuel producers and ideologically allied think tanks worked preemptively to influence climate policy and opinion by sowing doubt over the science (Jacques et al., 2008; McCright & Dunlap, 2000, 2003). These interests worked mostly through the Republican Party (McCright & Dunlap, 2010); this was likely because big business had long been part of the Republican coalition (Martin & Swank, 2008). Due to their efforts, the information environment generally traversed by the Republican rank and file became rife with climate change denialism (Dunlap & Jacques, 2013; Elsasser & Dunlap, 2012; Jacques et al., 2008; Sharman, 2014).

Part of the strategy to derail climate change policy was sowing seeds of doubt about the scientific consensus (Dunlap & McCright, 2011). Laboratory evidence suggests that the inclusion of contrarian voices into public discourse can distort perceptions of expert opinion, and may make people question whether there is enough agreement among experts to guide policy (Koehler, 2016). Elite sources also connected their audience's underlying ideologies to climate change: Because cutting GHG emissions requires intervention—regulation or increased taxation of carbon emissions—that curtail free market economics, people whose identity and worldview centers around free markets became particularly likely to reject the findings from climate science when the logic was laid bare (Lewandowsky, Gignac, et al., 2013b).

When people's worldview and identity are threatened by a scientific fact or its implications (e.g., the regulatory implications of climate change), they frequently resort to "identity-protective cognition" (e.g., Cook, 2016; Garrett, 2017; Kahan et al., 2007b; Whitson & Galinsky, 2008). Identity-protective cognition restores the person's worldview against an attack and can manifest itself in a variety of ways, for example, by altering subjective risk perception (Kahan et al., 2007b). In the case of climate change, however, identity-protective cognition faces a particularly strong challenge in light of the overwhelming scientific consensus that people's activities are causing our climate to change (for a review of the consensus evidence, see Cook et al., 2016). Given the overwhelming scientific evidence, the only available avenue for circumventing the consensus was by reinterpreting its existence. Instead of accepting that this consensus emerged as the result of researchers converging independently on the same evidence-based view, an alternative explanation for its existence was put forward: a presumed conspiracy among climate scientists, who are colluding in the "manufacture" of evidence for some nefarious purpose. Conspiracy theories are one of only a few rhetorical devices that can counter the evidence

demonstrating the existence of global climate change, since there is currently little scientific basis on which to dissent. In this way, conspiracy theories can act as a disruptive political mechanism: They can alter the grounds on which a debate is occurring.

Perhaps the best evidence showing that conspiracy thinking drives climate denial are works from Lewandowsky et al. who show that conspiracy thinking has a positive relationship with climate change denial (Lewandowsky, Cook, et al., 2015; Lewandowsky, Gignac, et al., 2013, 2015; Lewandowsky, Oberauer, et al., 2013; see also Smith & Leiserowitz, 2012). While the effect size of conspiracy thinking is smaller in magnitude than other predictors (e.g., political and economic ideology) the effects are nonetheless significant (cf. Dixon & Jones, 2015). The research into the ideological factors driving climate denial therefore shows that climate denialism is driven both by individuals' political and economic worldviews, and by their underlying predisposition toward seeing the world in conspiratorial terms. The literature suggests that the effect of political predispositions are the most powerful predictor of attitudes toward climate change, with conspiratorial worldviews being somewhat smaller.

Future Research

In recent years, there has been a dramatic increase in research on conspiracy theories (Moore, 2015). Researchers across several academic disciplines have discovered a great deal about who believes which conspiracy theories, when and why they have become popular, and what their consequences might be for individuals and society (Uscinski & Parent, 2014). However, there are still many gaps in knowledge and in this section we discuss some potential directions that future research might take—specifically with regard to the conspiracy theories surrounding climate change.

First, research on conspiracy theories tends to be conducted in individual disciplines and there is little interdisciplinary collaboration (Uscinski & Parent, 2014, pp. 9–10). The bulk of the research comes from psychology and social psychology that focuses on the underlying psychological factors that drive conspiratorial beliefs, thinking, and talk (Wood & Douglas, 2013; Wood et al., 2012). Political scientists have contributed by connecting political power and political ideologies to conspiratorial beliefs, thought, and talk (Uscinski & Parent, 2014). Sociologists have focused on conspiracy beliefs within demographic groups (e.g., Berlet, 2012; Parsons et al., 1999). These works by social scientists are overlaid across a wide range of scholarship focusing on historical (e.g., Hofstadter, 1964; McKenzie-McHarg, 2012; Olmsted, 2008; Wood, 1982) and cultural (e.g., Butter, 2014; Knight, 2002) factors. And on the other side of the academic “ocean,” philosophers and epistemologists have pondered the pros and cons of conspiracy theories (e.g., Coady 2006), as well as the best methods for determining their truth (e.g., Keeley, 1999). Unfortunately, this presents a missed opportunity for researchers to benefit from a wide range of theoretical and methodological perspectives to study a complex subject that involves psychological, political, sociological, cultural, and historical factors. This lack of across-discipline cooperation is particularly important in the case of climate change where beliefs are informed by factors such as personal characteristics, preexisting attitudes and experiences, geographical location, and political institutions and preferences.

Likewise, interdisciplinary research is needed to understand the consequences of climate change conspiracy theories. For example, how do climate change conspiracy beliefs influence political choices and policy decisions? How do climate change conspiracy beliefs influence actual behaviors? Experimental research on climate change intentions performed in laboratories can tell us only part of the picture. More field observation and field experiments are needed.

In addition to further joint inquiry, scientists need to collect more and better data. Longitudinal studies are required to examine the waxing and waning of climate change denial and conspiracy beliefs over time. Large-scale surveys are needed to explore how social, political, and demographic factors predict climate change conspiracy beliefs and subsequent behaviors. In particular, surveys need to ask about belief in the scientific consensus as well as beliefs in various specific conspiracy theories. Surveys also need to include more potential causes as well, such as authoritarianism, the big five personality traits, and demographics. Going back in time, archival research could shed light on how beliefs have changed since the 1980s in Western countries, and in other regions of the world where polling has not been in regular use.

Researchers also need to agree on the optimal way to measure underlying conspiratorial thinking and climate change conspiracy beliefs. To date, there is no agreed-upon measure of underlying conspiracy thinking (Lantian et al., 2016; Swami et al., 2017). Some researchers have measured conspiracy thinking by gauging the extent to which people believe in one particular conspiracy theory (e.g., Pasek et al., 2014). Others have devised scales of multiple conspiracy theories (e.g., JFK, 9/11, moon landings), which are summed to make an overall scale of conspiracy belief (Douglas & Sutton, 2011; Douglas, Sutton, Callan, Dawtry, & Harvey, 2016; Goertzel, 1994; Lewandowsky, Gignac, et al., 2013; Miller et al., 2016; Swami et al., 2011; van Prooijen & Acker, 2015). Others instead conceptualize conspiracy belief as stemming from an underlying disposition toward conspiratorial logic (Wood et al., 2012), and scales have followed to measure that underlying thinking using more general questions about conspiratorial worldviews rather than specific conspiracy theories. These scales vary widely. The most prominent is Brotherton et al.'s (2013) 15 question battery, the Generic Conspiracist Beliefs scale. This scale appears to capture underlying conspiratorial thinking quite well (e.g., Brotherton & Eser, 2015), but for scholars fielding national surveys, 15 questions just to measure one concept can be rather costly. To wit, Uscinski et al. (2016) use a 4 question battery and Uscinski and Parent (2014) use a 3 question battery. Lantian et al. (2016) devised a measure of conspiracy thinking that requires respondents to answer only 1 question.

The goal of these scales (such as Brotherton's) is to cleanly measure subjects' tendency toward conspiratorial thinking absent the contamination from other attitudes that might occur if specific conspiracy theories were asked about. But just as importantly, measuring conspiracy thinking as a latent dimension is an important conceptual choice. It suggests that people have an underlying tendency to believe in conspiracy theories, which then makes them susceptible to belief in specific conspiracy theories when they are either exposed to information about a conspiracy theory, or to a situation that triggers their conspiricism. Social scientists appear to be converging on a consensus about this.

One could argue that the sheer number of measurement strategies is itself a problem for the field, but this is to be expected in a burgeoning literature. Researchers may benefit from finding a consensus on which of these methods most adequately captures conspiracy thinking. To do so, it will be important to consider the advantages and disadvantages of each different method. For example, identifying the factors that drive belief in a single conspiracy theory does not mean that findings will apply across all conspiracy theories: There are idiosyncratic factors that drive belief in each different conspiracy theory. Asking about several different conspiracy theories, or asking questions about general conspiratorial possibilities, means that items are chosen at the discretion of the researchers and may bias results in particular ways.

To further the study of climate change beliefs, it is particularly important that scholars also focus on a broader set of conspiracy beliefs, including conspiracy beliefs that affirm the existence of global warming. The most commonly studied climate change conspiracy theories are those that encompass climate change denial and are popular in the media. These conspiracy theories tend to be endorsed more by individuals toward the right of the political spectrum than the left. And, they are particularly abhorred by those in academia. In general, the study of conspiracy theories tends to focus on conspiracy theories that are endorsed by people on the right, a tradition that has no doubt originated from the work of Richard Hofstadter, a prominent left-wing historian (Uscinski & Parent, 2014, pp. 92–93). However, as we have noted earlier, climate change conspiracy theories also exist on the left and there is little work to account for left-wing climate change conspiracy theories. Considering climate change conspiracy beliefs on both side of the political debate should be an important priority for future research (Douglas & Sutton, 2015).

Another important consideration for future research is how to successfully address the potential effects of climate change conspiracy theories. Sunstein and Vermeule (2009) made a number of suggestions to address their potential harms, but most of these—most notably the idea of infiltrating conspiracy groups to undermine them—seem either impractical, unethical, or doomed to failure. One reasonable suggestion may be to issue counterarguments to arm people against the dangers of conspiratorial thinking. For example, Banas and Miller (2013) found that fact-based anti-conspiracy arguments were effective in reducing belief in conspiracy theories about 9/11. Such persuasive techniques and strategies should be tested to reduce belief in climate change conspiracy theories (e.g., Lewandowsky et al., 2012). Communicators of scientific information about climate change may also consider “inoculating” people against climate change conspiracy theories by presenting correct scientific arguments before exposure to conspiracy theories (e.g., Douglas & Jolley, 2017; McGuire & Papageorgis, 1961; Pfau & Bockern, 1994).

Finally, more studies should expand upon the important works of Lewandowsky et al. (Lewandowsky, Gignac, et al., 2013, 2015; Lewandowsky, Oberauer, et al., 2013). These works provide the best evidence of a link between conspiracy thinking and climate change attitudes. One avenue for future research would be to examine if and how conspiratorial thinking differentially affects those of opposing political views. Lewandowsky’s works make the strong assumption that conspiracy thinking will lead anyone, regardless of political orientation, to deny climate change. This may be true—conspiracy thinking could lead people to reject scientific findings because they reject official narratives wholesale in favor of alternative conspiracy narratives (Wood et al., 2012). But a large body of literature suggests that the specific conspiracy theories that one will

believe given conspiratorial thinking will be largely determined by their other predispositions, in this case likely partisanship because the issue is so politicized (McClosky & Chong, 1985; Uscinski, 2014; Uscinski, Klostad, & Atkinson, 2016, Uscinski & Parent, 2014). Given this, we would not necessarily expect conspiracy-minded Democrats to deny climate change; we might instead expect them to double down on their affirmative climate change beliefs and instead accuse carbon-emitting industries of conspiracy. For this reason, we need more research on climate change attitudes and climate change conspiracy theories coming from the left and right, and more research on how climate conspiracy theories develop in the context of the mass media, the Internet, and domestic politics.

Concluding Remarks

Climate change is an issue on which there is a robust scientific position but much public debate and disagreement. People's opinions about climate change depend on many factors, but ideology tends to be the most important. One important factor that can explain climate change attitudes is underlying conspiracy thinking (Lewandowsky, Gignac, et al., 2013). This suggests that climate denialism is not due to a fair examination of the available scientific evidence, but rather an ideological critique that appears largely immune to evidence and reason (Uscinski & Parent, 2014). Conspiracy-tinged rhetoric, which has become commonplace in climate change discourse, can have far-reaching negative consequences in the effort to mitigate the effects of global climate change (Douglas & Sutton, 2015). Given the severity of global climate change, we call on social scientists to further investigate the causes and consequences of climate change conspiracy theorizing.

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